ATOMIC ENERGY newsletter.

THE FIRST AND ONLY ATOMIC NEWS SERVICE

ROBERT M. SHERMAN, EDITOR. PUBLISHED BI-WEEKLY BY ATOMIC ENERGY NEWS CO., 1000 SIXTH AVENUE, NEW YORK 18, N. Y.

February 10th, 1953
Vol. 8...No.13

Dear Sir:

A new series of tests of nuclear explosives will be conducted by the U.S. Atomic Energy Commission at its Nevada Proving Ground, near Las Vegas, starting next March. Objectives are to advance development of new and improved nuclear devices and to provide additional weapons performance data essential to military and civil defense effects studies. Participating with the USAEC in the tests will be the Federal Civil Defense Administration, and other governmental agencies. Some 18,000 troops of the Army, Navy, Air Force and Marines will engage in maneuvers in connection with these tests. Operations at the Nevada Proving Ground are directed by Carroll L. Tyler, manager of the USAEC's Santa Fe operations office.....Meanwhile, to clarify the situation regarding possession of nuclear weapons by nations other than the United States, Gordon Dean, USAEC Chairman, said in Washington last week that the U. S. Government knows as a fact that the Soviet Union has produced fissionable materials in quantity. Further, that with fissionable material at hand, it is not a difficult technical job to make workable nuclear weapons. He also reiterated that the Soviet Union has exploded three nuclear weapons: one in the late Summer of 1949, and two in the Fall of 1951. Using these facts, and other scientific and technical evidence at hand, he stated, "There is no doubt of the existence of a supply of nuclear weapons in the USSR".

Results of nuclear research which can be utilized by American industry are now available in a plastic injection press, the components of which cost less than $1,000, and which can be assembled and tested in about 250-hours, and an anti-swing crane with anti-creep variable speed hoisting, as developed by Argonne National Laboratory, Chicago. (Page 3, this LETTER).....A new group of patents, also developed during nuclear research, has now been released for use by industry generally, on a royalty-free basis, although non-exclusively. (Page 5, this LETTER).

Special priorities were set in the last fortnight by the National Production Authority for suppliers of electrical power for the U.S. atomic energy program. Such suppliers were given the same top-most priorities as those allocated the atomic energy projects themselves. This will expedite steel supplies for such power projects (page 2, this LETTER) as well as facilitate equipment supplies for the projects.

Some $50 million worth of uranium was produced by Colorado mines last year, according to the estimate of W. E. Scott, Jr., state commissioner of mines. This is the largest output of uranium ever produced in this state. (Other URANIUM mineral news, page 2, this LETTER).

A new high intensity nuclear reactor, using heavy water as the moderator, is being built at the Atomic Energy Research Establishment, Harwell, (England), Duncan Sandys, Minister of Supply, told the House of Commons last fortnight. He said that engineers at Harwell, and at Risley, another experimental station, are working on the design of reactor which can be used to produce economic power; it will be a breeder reactor, he explained.

Subscription rates: United States, U.S. possessions, and Canada, $18.00 a year. Latin America, $20.00 a year. All other countries, $25.00 a year.
Copyright Atomic Energy News All rights reserved

BUSINESS NEWS...in the nuclear energy field...

New Plant For Nuclear Explosives Processing & Assembly to be Erected: A site 18-miles east of Macomb, Illinois, on the Spoon river, in Fulton County, has now been selected by the USAEC for a new explosives processing and assembly plant. Some 9,800 acres of Government-owned land will be utilized. Construction of this new Spoon River Plant, as it will be called, will begin in the early Spring; cost will be an estimated $29 million. Project engineer for the USAEC on this job will be W. A. Curtis, who is now chief of the production planning branch of the USAEC's Santa Fe operations office. Architect-engineer for the project is the Fluor Corp., Ltd., Los Angeles. Most of the construction work will be on a lump-sum, competitive bid basis; approximately 2,000 construction workers will be required during late 1953. The plant will be operated by a private contractor not yet selected. About 2,000 persons will be employed to operate the plant. It is estimated that the plant will be completed in mid-1954.

New Financing for Electricity Supplier to Nuclear Project: New financing authority was granted by the SEC last week to Electric Energy, Inc., which is building a power plant for the USAEC's new uranium-235 producer plant at Paducah, Ky. The financing, which will yield nearly $70 million to the firm, is required (the SEC stated) because of an expansion of the USAEC project, and because of a $3,300,000 increase in the cost of original facilities. Of the financing, the bonds which are being issued are to be purchased by the two insurance companies which acquired the original issue of $100 million in bonds: the notes which are being issued are to be sold to a commercial bank; and the additional common stock, which is part of this financing, is to be acquired by Electric Energy's parent companies: Union Electric Co. of Missouri; Central Illinois Public Service; Illinois Power; Kentucky Utilities; and Middle South Utilities, Inc.

RAW MATERIALS...radioactive minerals for nuclear work...

UNITED STATES: Columbia University, New York, and University of Tennessee, have both received research contracts from the USAEC in connection with uranium minerals. Under a $550,000 contract, Columbia has undertaken to develop a process for the recovery of minute percentages of uranium from bituminous shales of the southeastern section of the United States. These shales, while of a very low grade, constitute an important potential reserve of uranium, the USAEC believes.

At the University of Tennessee, the USAEC's research grant was for approximately $48,000 under which studies of the uranium content of Tennessee's Chattanooga shale will be made. This is an extension of the original contract which was awarded the university last year.

In connection with uranium recovery from shale, a small experimental mine will begin operations soon near Sligo, Tennessee, to develop satisfactory methods of mining Southeastern shale deposits. The mine will be operated by the U. S. Bureau of Mines, under contract with the USAEC.

CANADA: Uranium has now been discovered in a new area in Canada, this time at Bancroft, 130-miles northeast of Toronto. The mineral is believed to be uraninite, and trenching has shown that possibly a large tonnage grading close to 0.1% uranium oxide can be developed.

BOOKS & OTHER PUBLICATIONS...in the nuclear field...

Atomic Power & Private Enterprise. A report by the Joint Congressional Committee on Atomic Energy, containing numerous statements, proposals and recommendations of private enterprise for the production and use of atomic energy in various fields of endeavor. 409 pages.--Superintendent of Documents, Washington 25, D.C. ($1.00).

Metallurgical Research in Uranium, Manganese, and Nodular Cast Irons. A report of work done at the Colorado School of Mines, Golden, Colo. Obtainable from the school. ($1.50)

Advances in Cancer Research. Edited by Jesse P. Greenstein, National Cancer Institute, Bethesda, Md., and Alexander Haddow, Royal Cancer Hospital, London. Among the reviews on various phases and areas of cancer research in this volume, Charles Heidelberger, University of Wisconsin, Madison, contributes "Applications of Radioisotopes to Studies of Carcinogenesis and Tumor Metabolism".--Academic Press, Inc., New York 10 ($12.00)

NEW PRODUCTS, PROCESSES & INSTRUMENTS...for nuclear work...

FROM THE MANUFACTURERS: New Model C-110 Roto-Matic sample changer is designed to simplify multi-sample counting in laboratories using radioisotopes. This sample changer carries up to 50 radiolabeled samples at one time, and is compact to the extent of requiring only 14"x15" of bench space. Model C-110 utilizes the simple three-position "Auto-Load" turntable of this manufacturer which selects a sample, places it in counting position within the 2" lead shield, and loads it into the storage sample magazine when the count is completed. Up to 50 samples can be counted, the cycle repeated, or background radiation count recorded. Sample carriers are expendable, and the chrome plated turntable can be decontaminated easily if necessary. --Nuclear Instrument & Chemical Corp., Chicago 10, Ill.

New film badge trade-named Dosifilm was designed, the manufacturer states, to supersede open-faced metal film badges worn to record radiation exposure of persons working with radioisotopes or x-rays. A lead-silver filter and three films of varying sensitivity are packed into plastic envelopes. The combination is said to permit accurate reading of exposures from 20 roentgens down to 10 mr. Radiations of various wavelengths can be distinguished, it is said, because of their various interactions with the filter. --R.C.Scientific Instrument Co., Inc., Playa del Rey, Calif.

New events-per-unit-time meter, model 5558, is a high-speed electronic counter combined with an accurate time base. Model 5558 will count events occurring either regularly, or with random distribution, at rates of from 20 to 1 million events per second with an accuracy of one count, the manufacturer states. May be used by relatively unskilled operators because of its direct readout feature with no lights to add or interpolate.--Berkeley Scientific Div., Beckman Instruments, Inc., Richmond, Calif.

DEVELOPED AT NATIONAL NUCLEAR RESEARCH LABORATORIES: An anti-swing crane with anti-creep variable speed hoisting and a pneumatic plastic injection press with unique features, have been developed and put into use at Argonne National Laboratory, Chicago.

The anti-swing crane (in its present laboratory model) makes it possible to transport radioactive and/or thermally hot materials without the necessity of guiding and steadying the hook and load. The pendulum-like swinging of the hook and load has been reduced to a minimum, while vertical creeping of the load has been completely eliminated. Developed by engineers of the remote control engineering division, at Argonne, it was conceived by associate division director Raymond C. Goertz, inventor of the master-slave manipulator. (The master-slave manipulator is a manipulative device which effectively reproduces the major motions of the human hand, for remote handling of extremely radioactive materials.) Commenting on this new crane, Dr. Harvey L. Hull, director of the division, has said that it should prove to be of value to industries and operations where material handling is a prime concern. Dr. Hull also stated that the crane has been developed to the point where interested industrial firms should be able to carry the program further and to perfect a full-scale crane with the unique features of the Argonne-developed model.

The pneumatic plastic injection press, which develops injection pressures up to 70,000-lbs per sq. in., is a strict departure from conventional presses which are hydraulically operated, and contains two features which are said to be unique to such devices. The first is the flexibility in the control of the operating pressure of the press. The press is driven by an air cylinder, and is controlled entirely by electric valves so arranged that the speed of injection is controlled by an adjustable throttle valve. When the air pressure in the air cylinder reaches a pre-set value, an automatic short-circuit of the throttle valve takes place, and the air pressure in the cylinder suddenly increases to the desired value. The other feature which is unique to this press is the temperature control system. In this press, the lower section of the injection cylinder is constructed of thin stainless steel. Shrunk on to this thin-wall section are heavy copper collars which provide the additional support needed to withstand the high pressure. Fastened to the copper collars are electrical heating bands. In operation, the plastic enters the top of the injection chamber, and is converted to a liquid state. As it moves downward toward the mold, it is heated to higher temperatures, and when it enters the mold it is at exactly the desired injection temperature. The components of this press cost less than $1,000, and it can be assembled and tested in about 250-hours.

The U. S. Atomic Energy Program from July-December, 1952. (Significant facts from the 13th Semi-Annual Report of the USAEC to Congress. This report will shortly be available in its entirety and will be reported in the book section of this LETTER)

Assumedly referring to thermonuclear weapons tests (the so-called hydrogen bomb) the USAEC has said that these tests last November at the Pacific Proving Ground in the Marhsall Islands had "high and sombre significance".

It was last July (continued the USAEC) that Congress authorized the largest addition yet made to the plant for production of fissionable materials and weapons. Such an expansion was made possible by new uranium discoveries, and the development of processes for extracting uranium from low-grade sources. These new fissionable materials plants were started last August and September.

When construction, for which these funds have been appropriated, is complete, the U.S. capital investment in atomic energy will be about $7.5 billion.

The development of nuclear reactors, for the production of power, made longer forward strides in this period than in any other similar period during the past decade, the USAEC observed. At the National Reactor Testing Station (Arco, Idaho) the theory of "breeding" was put under trial, and the Materials Testing Reactor went into operation there. Meanwhile, the assembly of one prototype nuclear reactor for submarine propulsion was substantially completed, and fabrication started on the sea-going version to power the submarine U.S.S. Nautilus. Work also began on the prototype of a nuclear reactor to power the submarine U.S.S. Sea Wolfe. In addition, a contract was entered into for developing a reactor to supply power for a large naval vessel such as an aircraft carrier. Work began on a testing facility for prototype nuclear power plants for aircraft.

As to economic power from nuclear reactors--many industrial firms and business leaders have shown a solid and growing interest in power reactor development. Further, an increasing number of suggestions were made that the Atomic Energy Act (1946) be revised to encourage further industrial activity. However, the considerations involved in such a revision (the USAEC explained) are neither few nor simple.

The USAEC has the reports from the first round of studies of technical and economic problems of nuclear reactor development made by four industrial teams. The portions of these classified reports which can be declassified and prepared for issuance will be released; it is believed that this will be of some assistance to industrial managements and other interested groups to learn more about the nature of the problems inherent in power reactor development. One of these four teams, augmented by 11 associated firms, has entered a joint program of research and development with the USAEC. A fifth, and new team, has begun its survey of nuclear reactor technology.

Further evidence of United States industry's interest in various phases of the atomic energy program is reflected by the 225 concerns that contacted the Office of Industrial Development, of the USAEC (Washington, D.C.) since its establishment last May. These firms were interested in doing research and development for the USAEC; starting new businesses based on atomic energy; selling their products to the USAEC; and getting general and technical information on all aspects of USAEC operations.

In nuclear science, the cosmotron at Brookhaven National Laboratory attained energies above 2 billion electron volts, and new exploration into nuclear phenomena got under way with this machine. At the same time, the discovery was made that, through application of a new principle, machines capable of producing greater energies could be built at relatively low cost. Plans were developing for an accelerator employing this new method to produce energies up to 100 billion electron volts.

Concerning raw materials--this period saw initial production from two new important sources of uranium: the gold ores of South Africa and the phosphate rock of Florida. The first production plants started off with no major and few minor problems, and are now up to scheduled performance. Foreign production and procurement programs progressed at a satisfactory rate, and plans for expansion and the development of new sources are under way. Domestic uranium production continued to increase, and further increases are scheduled for the coming year.

ATOMIC PATENT DIGEST...latest U. S. grants...

A new group of Government-owned patents, developed in the course of nuclear research, is now available on a royalty-free (non-exclusive) basis. Inquiries concerning this group should be made to Patent Branch, USAEC, Washington 25, D.C.

1.- An improved analyzer and recorder for continuously and simultaneously recording the relation between two variables. U.S. Pat. No. 2,620,256.

2.- An improved portable radiation detection instrument whose response continuously increases with increase in the level of radioactivity. U.S. Pat. No. 2,620,446.

3.- Apparatus and method particularly suited to generating ions of heavy metals from vaporizable compounds of the metal in vacuo. U.S. Pat. No. 2,621,296.

4.- Novel quenching container or basket for positively effecting random distribution of elongated members dumped therein for quenching purposes. U. S. Pat. No. 2,621,912.

5.- Method of liberating radioactive carbon dioxide from an alkaline earth carbonate containing the same. U. S. Pat. No. 2,622,008.

6.- Method for preparing boron trifluoride by heating a dry mixture of an oxide of boron and a higher metal fluoride. U. S. Pat. No. 2,622,014.

7.- Apparatus to automatically test cable wires for faults of excessive resistance or insulation leakage. U. S. Pat. No. 2,622,130.

8.- An improved double focusing mass spectrograph for examination and analysis of solid materials. U. S. Pat. No. 2,622,204.

9.- A simple, reliable, readily dismantled radioactive particle counting device, including means for collecting the substance under test. U. S. Pat. No. 2,622,208.

10.- Multiple ion source capable of continuously producing a copious supply of gaseous ions on a large scale. U. S. Pat. No. 2,624,009.

11.- An adjustable pipette assembly for remote control of the flow of fluid therefrom, and with means to flush the interior as well as wash the exterior. U. S. Pat. No. 2,624,656.

12.- Apparatus and method useful in determining the strength of an unknown magnetic field. U. S. Pat. No. 2,624,783.

13.- An electromagnetic accelerator--the synchrotron. Improvements for accelerating particles to high energy. U. S. Pat. No. 2,624,841.

14.- An improved ion source unit for an ionic mass separating apparatus. U. S. Pat. No. 2,624,845.

15.- Novel method and apparatus employing a ballastic electrometer for detecting, measuring, and recording extremely small electric currents. U. S. Pat. No. 2,624,847.

16.- An electrical signal analyzer visually presenting on the screen of a cathode ray tube wave form of a section of an electrical signal. U. S. Pat. No. 2,624,860.

17.- Method for electrolytically producing nickel powder having a mean particle size of between 7- and 15-microns. U. S. Pat. No. 2,625,507.

18.- New and improved photomultiplier tube coincidence circuit capable of detecting a coincidence between a pulse of light and a pulse of electrical energy. U. S. Pat. No. 2,625,653.

19.- Ionization chamber useful in monitoring radioactivity of a gas stream. U. S. Pat. No. 2,625,657.

20.- Method for preparing zirconium tetrachloride from zirconium tetrafluoride. U. S. Pat. No. 2,626,203.

21.- Method of polymerizing trifluorochloroethylene. U. S. Pat. No. 2,626,254.

22.- Method and apparatus useful for removing a beam of charged particles from a particle accelerator. U. S. Pat. No. 2,626,351.

23.- An improved target assembly for particle accelerators. U. S. Pat. No. 2,626,359.

Sincerely,

The Staff
ATOMIC ENERGY NEWSLETTER

February 10th, 1953.